Televes®

Ref. 554912

EN **DVB-T SD/HD Encoder/Modulator**

User Manual

Televes

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Safety Instructions

WARNING: To prevent fire or electrical shock, do not expose the device to rain or moisture.

General Precautions

- Avoid placing the device next to central heating components and in areas of high humidity.
- Do not cover the device with elements that obstruct the ventilation slots.
- If the encoder modulator has been kept in cold conditions for a long time, keep it in a warm room minimum 2 hours before plugging into the mains.
- Mount the encoder modulator in vertical position with the connectors located on the top side.
- When replacement parts are required, be sure the service technician has used replacement parts specified by the manufacturer or have the same characteristics as the original part. Unauthorized substitutes may result in fire, electric shock or other hazards.
- Safety check- Upon completion of any service or repairs to this device, ask the service technician to perform safety checks to determine that the device is in proper condition.

Power precautions

- The encoder modulator is powered with a voltage of 12V DC. The power supply voltage must not exceed the recommended voltage, which otherwise may cause irreparable damage to the device and the invalidation of the warranty. Therefore:
  - Do not replace power supply with a voltage greater than 12V DC.
  - Do not connect the device to the power if the power cord is damaged.
  - Do not plug the device into mains supply until all cables have been connected correctly.
  - Do not cut the cord.

1. Introduction

1.1 General Description

554912 encoder & modulator (home use) is Televes´ consumer product which allows audio/video signal input in TV distributions with applications in home entertainment, surveillance control, inns, restaurants, small shops, etc.
It is a device that allows to convert a HDMI signal into digital DVB-T COFDM (MPEG4 AVC/H.264) signal and so distribute for the existing network.
This modulator has one multi-format input that allows the connection of the following signals: YPbPr or AV or S-Video.
The signals source could be from HD satellite receivers, blu-ray players, CCTV cameras, DVD players, etc. Its output signal is to be received by a DVB-T standard TV, DVB-T STB etc.
With this DVB-T modulator is also possible to use a USB memory as signal source.

Important Note: The 3D signal from blu-ray 3D isn't supported.

1.2 Main Features:

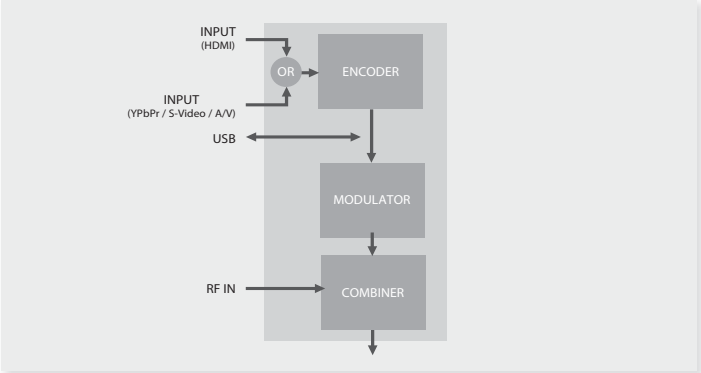
- DVB-T COFDM modulator
- MPEG-4 AVC/H.264 encoding
- 3 Inputs: HDMI – USB – Multi-Format (YPbPr/S-Vídeo/AV)
- USB PVR and Playback (with loop function)
- Removable power supply
- Low consumption
- RF frequency range 47-862MHz
- RF Looptrough
- Bandwidth (6/7/8 MHz)
- Easy to program via keyboard
- LCN mode selection support
- Advanced edition of parameters: service name, program name, program number, PMT PID, PCR PID, A/V PID, EIT event, TSID, ONID
- Color configuration: brightness, contrast, saturation, Hue.
- Upgrade by USB.

1.3 Contents

Verify that the following components are included in the packaging:

- 1 x DVB-T Encoder/Modulator ref.554912
- 1 x Power supply (with EU and UK adapter)
- 1 x HDMI Cable
- 1 x VGA Adapter Cable (YPbPr/S-Video/AV)
- Quick Guide

1.4 Blocks diagram



1.5 Technical specifications

Encoder		
Video	Encoding	MPEG-4 AVC/H.264
	Interface	HDMI or YPbPr/S-Video/AV (With VGA adapter)
	Resolution HDMI	1920x1080_50p / 1920x1080_60p 1920x1080_50i / 1920x1080_60i 1280x720_50p / 1280x720_60p
	Resolution YPbPr	1920x1080_50i / 1920x1080_60i 1280x720_50p / 1280x720_60p
	Resolution CVBS/S-Video	720X576_50i (PAL) / 720X480_60i (NTSC)
	Bit rate	1.000~19.000 Mbps
Audio	Interface	HDMI or Stereo/Mono (RCAs)
	Sample rate	48KHz
	Bit rate	64, 96, 128, 192, 256, 320, 384kbps
Modulator		
Standard		DVB-T COFDM
Bandwidth		6M, 7M, 8M
Constellation		QPSK, 16QAM, 64QAM,
Code rate		1/2, 2/3, 3/4, 5/6, 7/8.
Guard Interval		1/32, 1/16, 1/8, 1/4.
Transmission Mode:		2K
MER		≥42dB
RF frequency		47~862MHz (1KHz step)
RF output level		-16~ -36 dBm (73~93 dBµV), 0.1dB step
RF looptrought		5 - 900 MHz (10 dB ± 2 attenuation)
USB		
File System		FAT 32 - High Speed 2.0 (*)
Memory Suggested		32 ≤ Memory ≤ 500GB
USB PVR		".ts" files - Max. 2GB
USB Playback		Only ".ts" files
System		
Management		Keys
Language		English
Upgrade		USB + JTAG
General		
Power supply		12V DC 2A
Power consommation		900mA
Dimensions		172 x 122 x 50mm
Weight		520g
Operation temperature		0 ... 45 ºC

(*) Televés does not guarantee 100% compatibility with all USB devices. Televés recommends the use of high quality USB devices.

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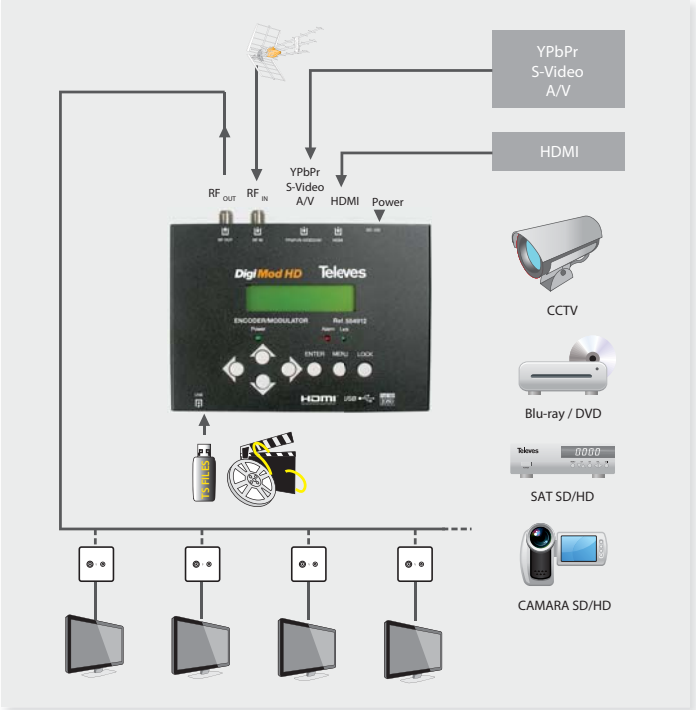
2. Product description

2.1 Indicators and controls

DC 12V	Power input
HDMI	HDMI input (supporting SD and HD signals)
YPbPr/S-Video/AV	YPbPr/S-Video/AV signal input through a VGA adapter cable
USB Port	Video Record, Playback and upgrade SW
RF in	to combine input RF signal (10 dB attenuation)
RF out	to distribute modulated signal (47-862 MHz, 73~93 dBµV)
Grounding	To connect the earth cable.

2.2 Installation/Application

1. Screw the encoder modulator where you want to install it. Left 10 cm of free space around from each other once the devices have been installed.
2. Please connect the cable(s) from the source. The signal source can be from a blu-ray, DVD, SD/HD satellite receiver, CCTV, surveillance monitor, etc.
3. Connect cable to RF output to TV.
4. Connect the power to the wall outlet with the power adapter.



3. Operation

3.1 Button introduction

554912 Encoder Modulator is controlled and managed through the key board and LCD display.

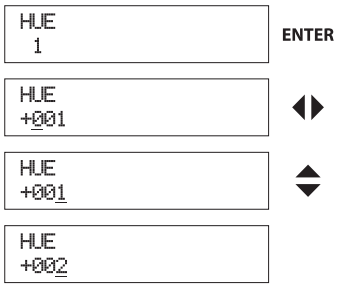
LCD Display – It presents the selected menu screen and the parameter settings. The backlight in the display is on when the power is applied.

LED – These lights indicate the working status

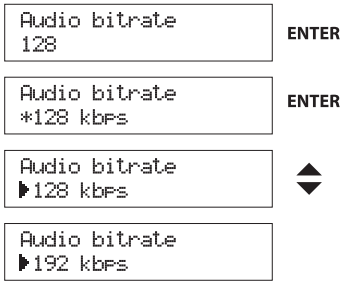
- **Power**: It lights on when the power supply is connected.
- **Alarm**: It lights on when the there is error, such as the signal source loss.
- **Lock**: It lights on when the signal source connected and goes off when the signal lose.

Please check if is selected the correct interface.
◀ / ▶ / ▲ / ▼ buttons – Use these buttons to turn the screen pages, shift the target items by moving the triangle, or change the parameter settings in the program mode.

ENTER – Use this button to enter a submenu or save a new setting after adjustment; press it to start adjusting the value of certain items when the corresponding underline flash with Up and Down buttons;



Press it to activate the hidden selections and change the setting with Up and Down (or Left and Right) buttons.



MENU – Press this button to step back.
LOCK – Locking the screen / cancelling the lock state, and entering the main menu after the initialization of the device. After pressing lock key, the system will question the users to save present setting or not. If not, the LCD will display the current configuration state.
When the power is connected, the LCD will start to initialize the program. The LCD menu goes as below chart.

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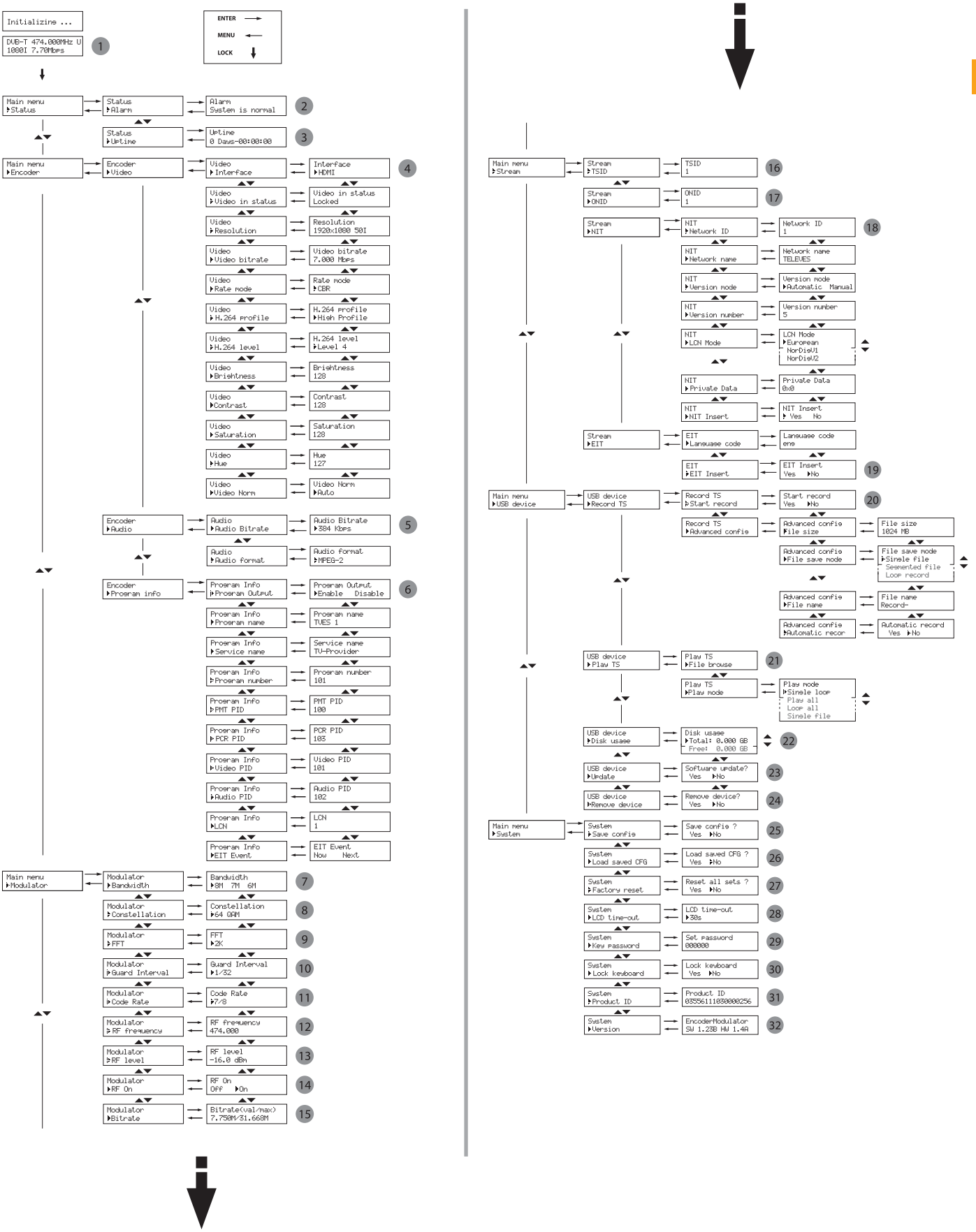
3.2 Management

Switch On, then below status will be displayed, few seconds' initialization then open startup picture.



3.3 General setting for main menu

1 **DVB-T**: modulating standard; XX.XXX MHz: the current output frequency; 1080i: video resolution of signal source; X.XX Mbps: the current encoding bit rate. **U**: symbol of the USB disk insertion.

2 **Alarm Status**: For example, if the HDMI cable is disconnected, it will display "Video 1 Not Lock" under this menu.

3 **Uptime**: It displays the working time duration of the device. It times upon power on.

4 **Video Parameters**: In the "Interface" option you can select the input signal that will use (HDMI, YPbPr, CVBS or S-Video). User can also adjust values of rest items. (Bit rate: 1.000 ~19.000Mbps,Video rate mode, H.264 profile, H.264 level, Brightness & Contrast & Saturation:0-255; Hue:-128+127)

5 **Audio Bit rate**: Select audio bit rate among 64, 96, 128, 192, 256, 320, 384 kbps.

Audio Format: Please select the correct audio format.

6 **Program Information**: User can enable or disable the program output under menu Program Output. User can also enter the other items to edit the Service Name, Program Name, Program Number, and PIDs of PMT, PCR, Video and Audio, and edit LCN (Logical channel number). EIT Event – User can enter this menu to setup EIT (Event Information Table) for the current and next program event. The EIT contains Start Time, Duration, Event Name, and Start Year of the event. All the EIT information can be displayed on the TV screen on condition that the EIT is chosen to insert (see explanation 19).

-***NOTE***: When we use two or more modulators in the same instalation is necessary to edit the TSID and LCN values in order to be different in each unit.

7 **Bandwidth**: choose between 6M, 7M and 8M.

8 **Constellation**: DVB-T modulator contains 3 constellation modes – 64 QAM, QPSK and 16 QAM.

9 **FFT** (Transmission Mode): 2K.

10 **Guard Interval**: Select among 1/32, 1/16, 1/8 and 1/4.

11 **Code Rate**: It refers to FEC-Forward Error Correction rate. It contains 1/2, 2/3, 3/4, 5/6 and 7/8.

- ***NOTE***: The different combination of bandwidth, constellation, guard interval and code rate (FEC) will form a different output code rate. Please see table 1 (recommended MPEG-4 Code Rate).

12 **RF Frequency**: Adjust it at range of 47 to 862MHz. Set it according your regional situation or inquire your local services.

13 **RF Level**: Adjust it at range of -16~ -36dBm.

14 **RF On**: User can choose to turn on or turn off the RF under this menu.

15 **Bit Rate**: User can read the current modulating bit rate and the maximum bit rate

16 **TSID**: (Transport Stream ID) User can view or adjust after enter this menu.

17 **ONID**: (Original Network ID)-User can view or adjust after enter this menu.

18 **NIT**: (Network Information Table) NIT table is a very important table for describing the network and TS. User can enter the submenus displayed and edit the values or select the LCN (Logical channel number) mode, and choose whether to insert the NIT. If user chooses to insert the NIT, information (Network ID, Network Name, LCD Mode, Private Data and LCN number of the program mentioned in explanation 6) will be added to the transport stream.

- ***NOTE***: when the Private Data is set as 0*0, it is invalid. For example in UK is necessary to edit the value of Private Data to: 0x233A.

19 **EIT**: EIT Insert - As mentioned above (6), the event information table can be chosen whether to insert into the TS or not under this menu. If yes, the EIT information set above (6) will be displayed on the TV screen. Language Code – to set the EIT language For example, code of the English language is eng. If you set the code as eng, the EIT displayed will be in English language.

20 **USB Device (Record and Play):** This modulator allows to record or playing ("ts" files) through the USB port. Please connect a USB memory with the following specifications:

File System: FAT32 - High Speed 2.0 (*)

Memory Suggested: 32 ≤ Memory ≤ 500GB

Televes recommends the use of high quality USB devices.

(*) Televes does not guarantee 100% compatibility with all USB devices.

20 **Record TS**

Connect the signal source, select "Start Record" and choose "Yes" to start recording.

Advanced Config:

- **File size:** User can set the file size for the *.ts to be recorded. A single file can be maximum 2000MB in size.
- **File save mode:** there are three diferent modes:

- *Single file* (For example, when the file size is set as 1000M and the *.ts is recorded up to 1000M, it automatically stops recording TS.).

- *Segmented file* (For example, when the file size is set as 1000M and the *.ts is recorded up to 1000M, it automatically saves the files and continues to record TS and save it to next file until the USB memory is full.).

- *Loop record*: (it automatically saves the files and continues to record TS and save it to next file. When the USB memory is full, it replaces the previous files.)

- **File name:** User can edit the name for the *.ts files to be recorded. For example, if users name it "Record-", it will give name to the saved *.ts files"Record-001.ts", "Record-002.ts"…"Record-00N.ts".

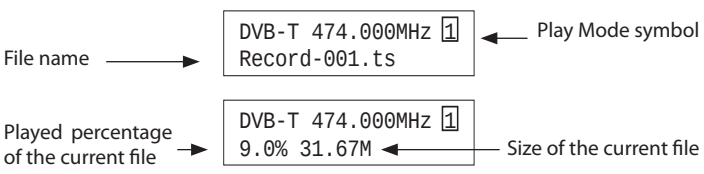
Automatic Record: User can choose between record the TS automatically or manually.

21 **Play TS**

- **File browse:** Please select the file that you want to play and press the "Enter" key to start play.
- **Play mode:** Select a play mode as you needed before playing the *.ts file.

The user can create ".ts" videos for playback, please see chapter "TS Creator Software". when the modulator reproduce a ".ts" video created is necessary make a new search in the televisions.

When the *.ts is being playing, the LCD modulator will present a playing interface as shown below.



Play Mode symbol

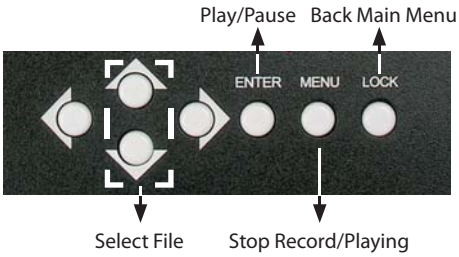
1 *Single loop*

A *Play all*

A *Loop all*

1 *Single file*

At this moment (recording or playing TS files), the keys has other functions:



Note: If the modulador fails you should restart the equipment.

22 Disk Usage

In this option, user can see the USB capacity (total and free) of the USB disk.

23 Update

With this option is possible to upgrade the software version of the modulator. Select "Yes" to update the modulator with the update file present in the USB disk.

24 Remove Device

Please select the "Yes" option to remove the USB disk safely.

25 Save Config: Yes/No-to save/give up the adjustment of setting.

26 Load Saved CFG: Yes/No-to load/ not to load the saved configuration.

27 Factory Reset: Yes/No-choose/not choose the factory's default configuration.

28 LCD time-out: A time limit that LCD will light off. Choose among 5s, 10s, 45s, 60s, 90s and 120s (seconds).

29 Key password: Please set the password (six digits: 000000).

30 Lock Keyboard: Choose Yes to lock the keyboard, when the keyboard will not applicable to avoid unexpected operations. Choose No to unlock the keyboard. (If forgetting your password, please use the universal code "005599".)

31 Product ID: User can view the serial number of this device. It is read-only and unique

32 Version: It displays the version information of this device. Encoder Modulator: the name of the device; SW: software version number; HW: hardware version number. User can also press ENTER again to view the published time of this device.

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Table 1 Recommended MPEG-4 Code Rate

Modulation Constellation	FEC	6MHz Bandwidth				7MHz Bandwidth				8MHz Bandwidth			
		Guard Interval				Guard Interval				Guard Interval			
		1/4	1/8	1/16	1/32	1/4	1/8	1/16	1/32	1/4	1/8	1/16	1/32
QPSK	1/2	The weak ability of error-correcting and anti-interference in this area											6.03
	2/3				6.03	5.80	6.45	6.83	7.03	6.64	7.37	7.81	8.04
	3/4		6.22	6.58	6.78	6.53	7.25	7.68	7.91	7.46	8.29	8.78	9.05
	5/6	6.22	6.91	7.31	7.54	7.25	8.06	8.53	8.79	8.29	9.22	9.76	10.05
	7/8	6.53	7.25	7.68	7.91	7.62	8.46	8.96	9.23	8.71	9.68	10.25	10.56
16QAM	1/2	7.46	8.29	8.78	9.04	8.70	9.67	10.24	10.55	9.95	11.06	11.71	12.06
	2/3	9.95	11.05	11.70	12.06	11.61	12.90	13.66	14.07	13.27	14.75	15.61	16.09
	3/4	11.19	12.44	13.17	13.57	13.06	14.51	15.36	15.83	14.93	16.59	17.56	18.10
	5/6	12.44	13.82	14.63	15.08	14.51	16.12	17.07	17.59	16.59	18.43	19.52	20.11
	7/8	13.06	14.51	15.36	15.83	15.24	16.93	17.93	18.47	17.42	19.35	20.49	21.11
64QAM	1/2	11.19	12.44	13.17	13.57	13.06	14.51	15.36	15.83	14.93	16.59	17.56	18.10
	2/3	14.92	16.58	17.56	18.09	17.41	19.35	20.49	21.11	19.91	22.12	23.42	24.13
	3/4	16.79	18.66	19.76	20.35	19.59	21.77	23.05	23.75	22.39	24.88	26.35	27.14
	5/6	18.66	20.73	21.95	22.62	21.77	24.19	25.61	26.39	24.88	27.65	29.27	30.16
	7/8	19.59	21.77	23.05	23.75	22.86	25.40	26.89	27.71	26.13	29.03	30.74	31.67

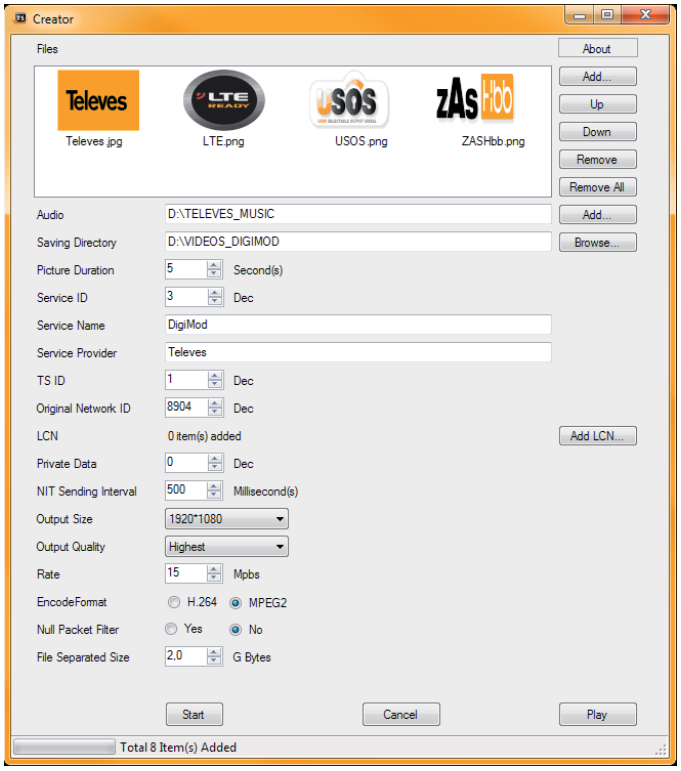
4. TS Creator Software

The user can create ".ts" videos containing pictures, music and videos with our "TS Creator" software on a PC and save them into the USB memory.

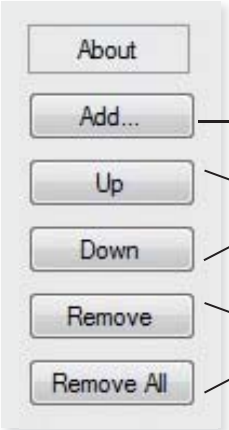
The ***Ts Creator*** application support the followings formats:
Image: JPG, PNG, BMP, GIF
Audio: MP3, WAV
Video: WMV, MPG, MP4, TS, AVI

4.1 Installation

1. Download our ***TS Creator*** software to your PC to get the installer and its auxiliary routine.
2. If your PC hasn't installed ***Net Frame 2.0*** yet, double-click "NetFx20SP2_x86.exe" until complete the installation.
3. Double-click ***Setup.exe*** application to install the ***TS Creator*** and generate a desktop shortcut.



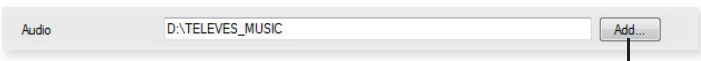
4.2 Operation



Click to add Images and videos

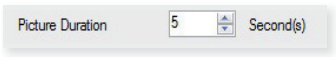
Click to adjust the order of Images/videos

Click to delete the Images/videos



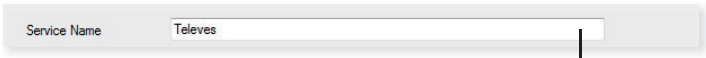
Click to add audios

Click to set a save path for the TS video to be created.

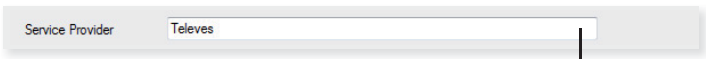


To set time duration for every picture when playing the video

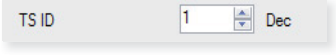
Please edit the service ID value.



Edit the program name (without spaces) that will appear on television.

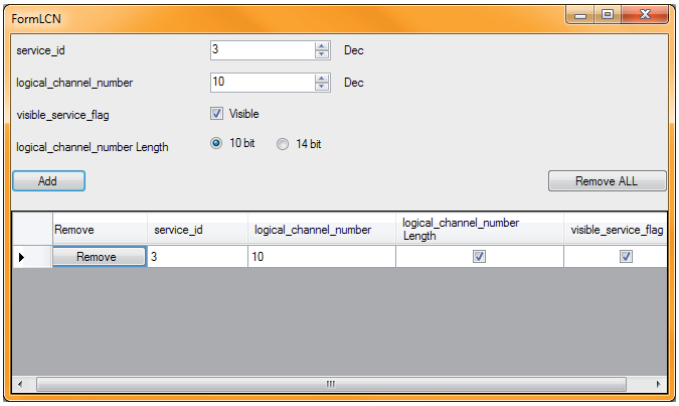


Edit the servive Provider name (without spaces).



Edit the TSID value

Please set the ONID value of your country.



LCN
If you want to add LCN please select the "ADD LCN" option.

- Service ID - Set the same value that was previously edited.
- Logical Channel Number -Set the LCN value that you want.
- Visible Service Flag - Please Enable or disable this option.
- Logical Channel Nunber Length - Please select between 10bit or 14bit.

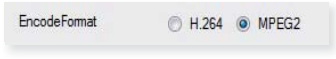
At the end, select the "Add" option

Set the "Private Data" value of your country. If your country not use this parameter, set this value to: "0".
For example in UK is necessary to edit the value to: 9018.

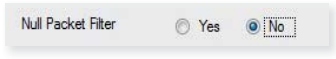
To set the interval value.

To set the resolution for the output video

The video is transformed based on VBR (Variable Bit Rate). The number set here represents the highest bit rate for the output video and bit rate will varies under the number.



Users can select a encode format here according to the standart of receiving terminal.



Users can filter the null packet to boost the video´s effect bit rate.

A single video can be maximum 2.0 GB in size. (554912 cannot play bigger than 2GB)

After setting all the parameters, click

to start the transformation. Click "OK" when it prompts "The operation completed normally."

Click this button to stop the transformation before the operation completed.

After finishing the transform operation, users can click this button to play the generated TS video.

4.3 File Management

After finishing the transformation, users can find out the videos files generated according the Saving Directory. For example, we save the video in "D:\VIDEOS_DIGIMOD" so we can find it in Disk D\Folder VIDEOS_DIGIMOD.

- Management:

1. Three files will be generated if the Null Packet has been filtered.

FinalOutput.ts → TS video for preview though the "Creator" interface by clicking "Play" button

FinalOutput_204_0.ts

FinalOutput_204_0.tsinfo

→ TS video and information files: Users need to save the two files together in the USB memory, and then 554912 can read them and play the video.

2. Two files will be generated if the Null Packet has not been filtered.

FinalOutput.ts → TS video for preview though the "Creator" interface by clicking "Play" button

FinalOutput_0.ts → TS video: Users need to save it in the USB memory, and then 554912 can read them and play the video.

- Remarks:
  - All the files names are automatically generated.
  - Rename the files before creating a new video to avoid covering the previous files.
  - If you rename "FinalOutput-204-0.ts" or "FinalOutput-204-0.tsinfo", always keep the names the same (Extension excluded) and then 554912 can read them and play the video.

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DECLARATION OF CONFORMITY Nº DCI140319102934

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KONFORMITETSERKLÆRING
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KONFORMITÄTSERKLÄRUNG
ΠΙΣΤΟΠΟΙΗΤΙΚΟ ΣΥΜΜΟΡΦΩΣΗΣ
FÖRSÄKRAN OM ÖVERENSSTÄMMELSE
VAATIMUSTENMUKAISUUSVAKUUTUS
ATITIKTIES DEKLARACIJA
ДЕКЛАРАЦИЯ СООТВЕТСТВИЯ
MEGFELELŐSÉGI NYILATKOZAT
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554912

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- **Low Voltage Directive 2006 / 95 / EC**
- **EMC Directive 2004 / 108 / EC**

Following standards/ *Con las normas / Com as normas / Selon les normes / Con le norme / Folgende Anforderung / Ακόλουθα πρότυπα / Följande standard / Seuraavien standardien / Zastosowanie następujących norm / Pagal standartus / Следующих стандартов / Respecta urmatoarele standarde / A Következő szabványoknak / Følgende standarder / Følgende standarder / Volgende richtlijnen en normen / Наступних стандартів / Järgmistele standarditele / sekojošiem standartiem / Následující normy:*

EN 60950-1:2006 + A1:2010 + A11:2009 + A12:2011, EN 55022:2010, EN 55024:2010

Santiago de Compostela, 19/3/2014

CE

José L. Fernández Carnero
Technical Director

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